HCM-D23 Hydraulic Power Unit

User's Manual

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E.H. Wachs Part No. 14-MAN-33
Revision 1, April 2015

IMPORTANT: Read this manual carefully before starting and operating the power unit.

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Chapter 1

About the HCM-D23 Hydraulic Power Unit

The Wachs HCM-D23 hydraulic power unit provides 15 gpm hydraulic flow at a maximum pressure of 1800 psi (57 l/min at 124 bar). The unit is powered by a 23 HP diesel engine.

The HCM-D23 is designed to operate Type 1, Type 2, or Type 3 open-center tools.

Before operating the unit, read and understand the instructions in this manual, and in the manufacturer's manual provided for the diesel engine.

FEATURES

The HCM-D23 hydraulic power unit includes the following standard features:

- Liquid cooled, 23 HP diesel engine (tier 4 compliant).
- Large capacity hydraulic oil cooler.
- Replaceable 10-micron hydraulic oil filter.
- HTMA flat faced couplers.
- Fuel level gauge and hour meter.
- Auto shutdown for low engine oil pressure or high temperature.
- Solid rubber tires.
- Collapsible handles.
- Heavy-duty single point lift ring.

The engine owner's manual is provided with the HCM-D23 HPU. Refer to the engine manual for all engine maintenance and service procedures.

The following figure shows the features of the control panel.

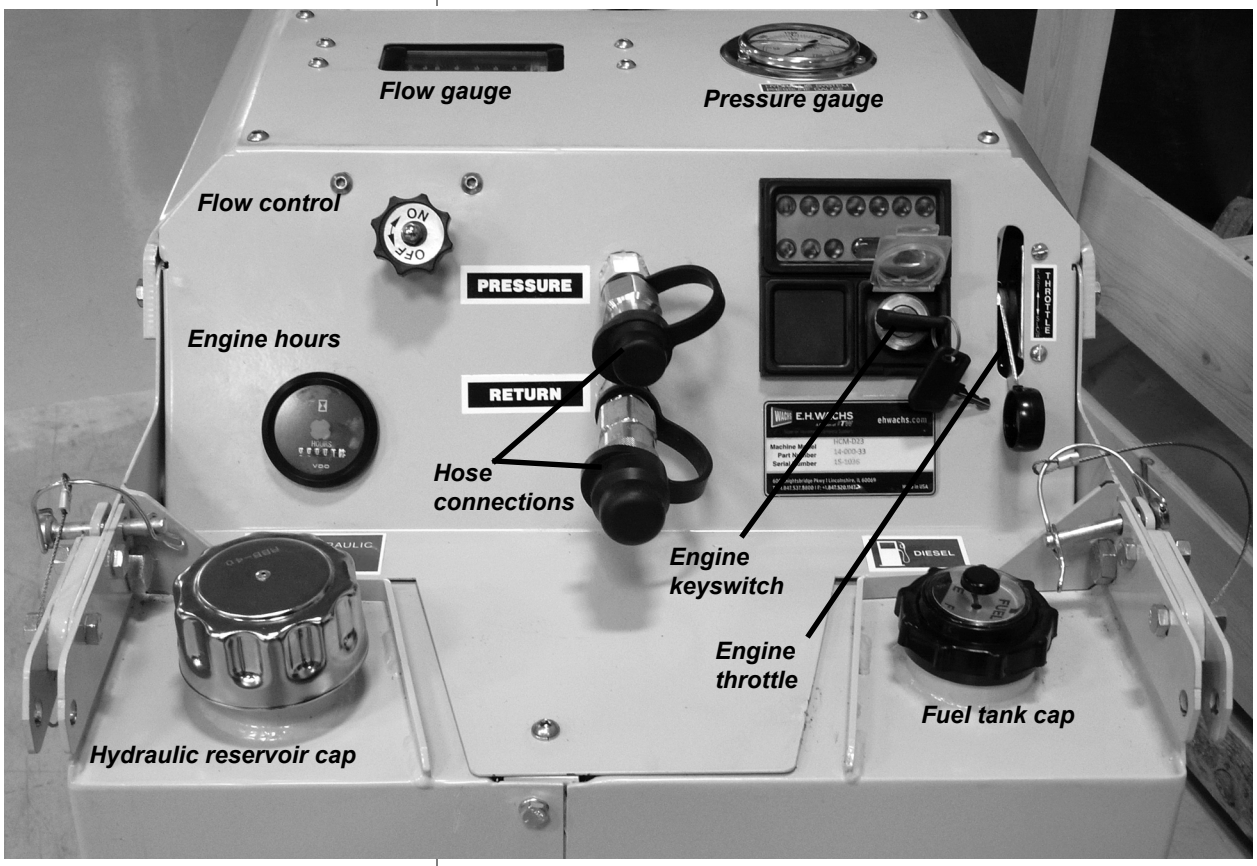


Figure 1-1. The photo shows the HCM-D23 operating features.

The handles are collapsible to keep them out of the way during operation and for storage. A pin secures each handle in its operating or collapsed position. Always have the pins inserted to secure the handles.

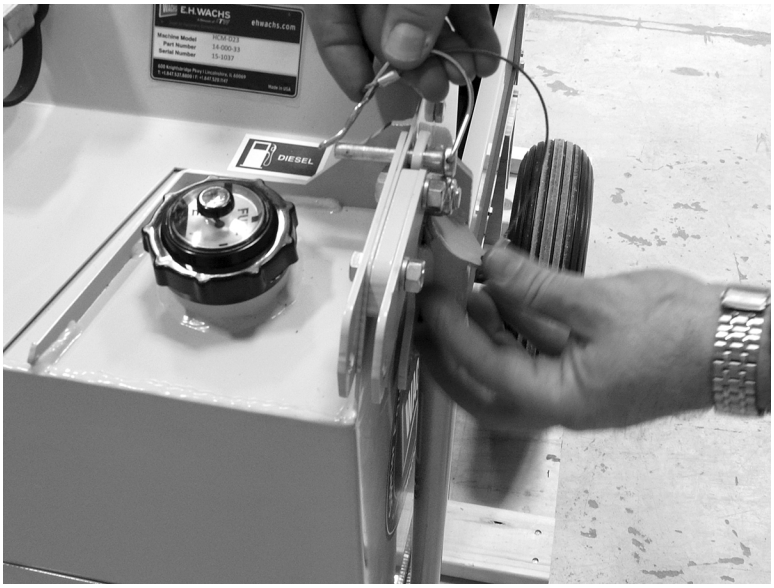


Figure 1-2. The photo shows the pin inserted with the handle collapsed.

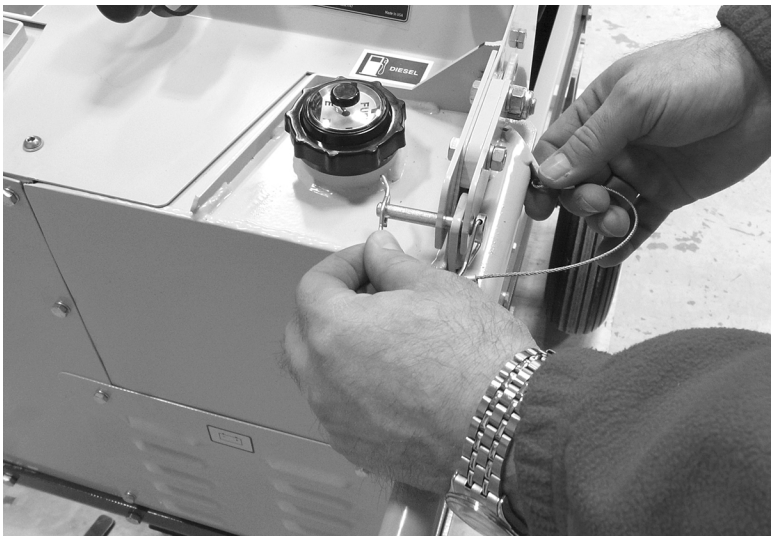


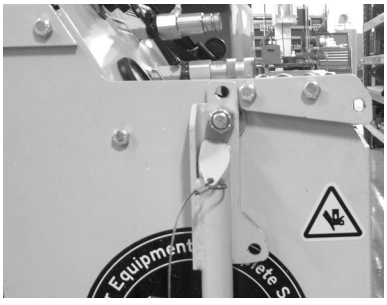
Figure 1-3. The photo shows the pin inserted with the handle in the operating position.

SPECIFICATIONS

- **Flow:** 0-15 gpm @ 1800 psi (0-57 l/min @ 124 bar)
- **Dimensions:** 39” l x 36.5” h x 28.8” w (99 cm x 93 cm x 73 cm)
- **Weight:** 520 lb (236 kg)

CAUTION

Do not put your hands between the handles and frame of the power unit when collapsing the handles. The handle could drop and injure hands or fingers. A “Pinch Point” safety label on the side of the power unit warns of this hazard.



- **Filtration:** 10 micron return line canister
- **Oil Cooler:** Air to oil
- **Fuel Capacity:** 5 gallons (19 liters)
- **Hydraulic Oil Capacity:** 4 gallons (15 liters)
- **Hydraulic Relief Pressure:** 1800 psi (124 bar)

SET-UP INSTRUCTIONS

The HCM-D23 power unit is completely assembled before delivery. For safe shipping, it is delivered without battery, fuel, or hydraulic fluid.

Battery Installation

The HCM-D23 HPU uses a 12 V, 26RC battery, 540 cca @ 0° F.

The battery compartment cover is held in place with 4 screws. The following figures show the battery compartment, the battery cables, and battery hold-down strap.

1. Remove the screws and take off the battery compartment cover.

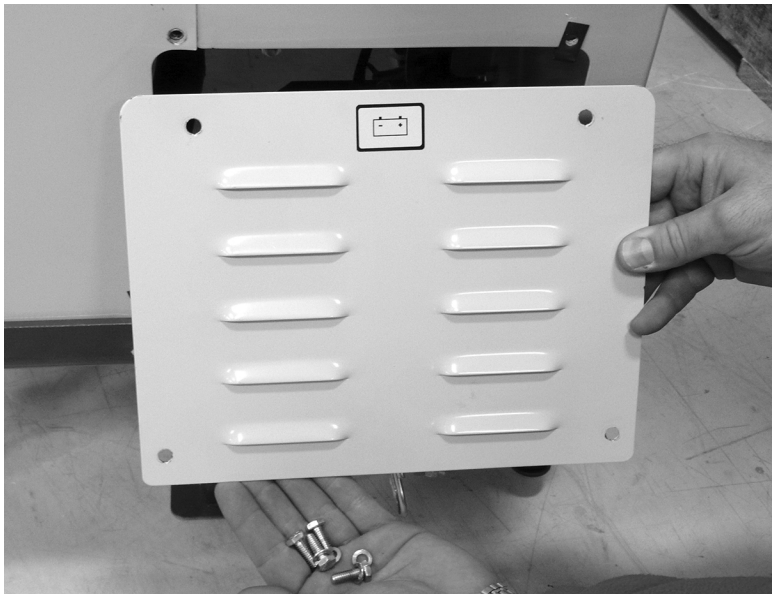


Figure 1-4. Remove the battery compartment cover.

2. Connect the battery cables to the posts on the battery:

- red cable to positive (+) post
- black cable to negative (-) post.

Figure 1-5. Attach the cables to the battery posts.

3. Insert the battery into the compartment. **CAUTION: Avoid letting the battery posts touch the frame of the power unit.**

4. Secure the battery with the hold-down strap. Replace the battery compartment cover.

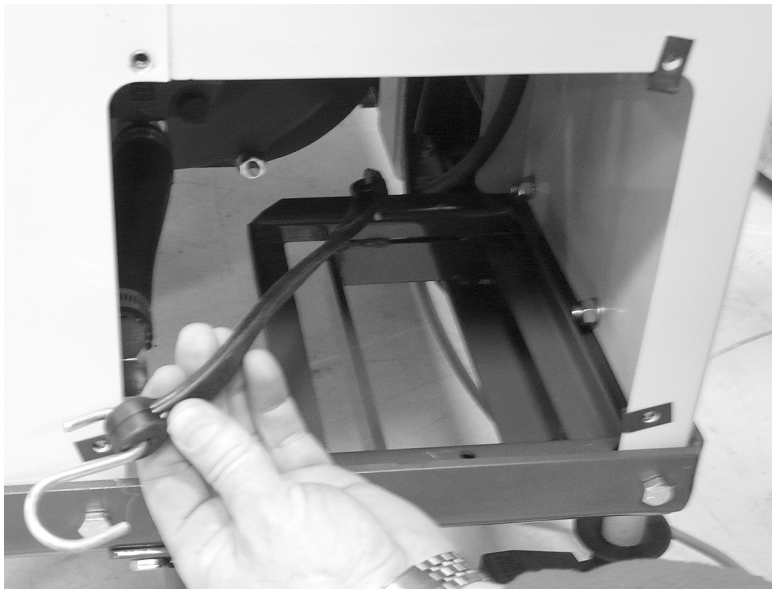


Figure 1-6. A hold-down strap is provided to secure the battery in the compartment.

Fill the Hydraulic Reservoir

Use a premium-quality hydraulic oil (approximately 4 gallons [15 l]). The reservoir must be filled before power unit is started. Oil should have anti-wear characteristics, excellent rust protection, and contain additives to protect against foaming.

NOTE: It is extremely important that the pump is not started until oil is in the system. Power units are shipped without oil. Operating a pump without oil, even for a short time, will result in damage.
NOTE: When filling the reservoir initially, elevate the front of the power unit slightly so that the air can purge out of the reservoir.

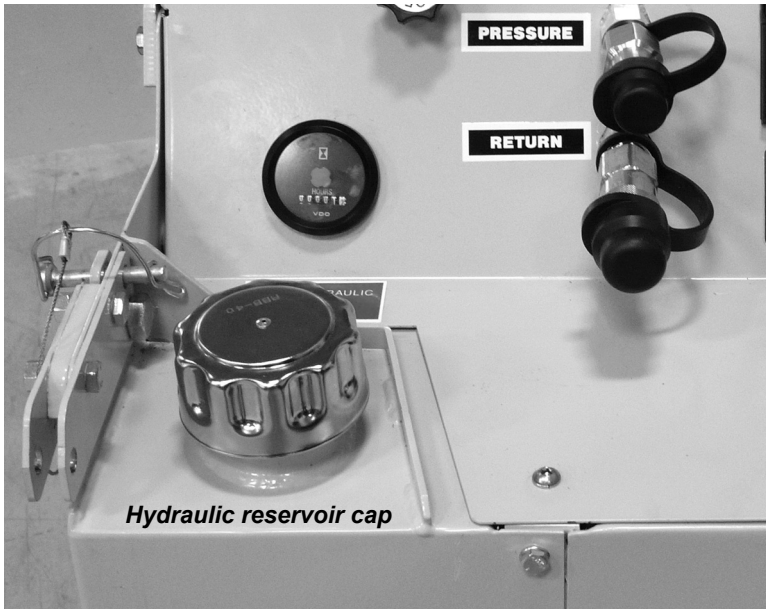


Figure 1-7. Remove the hydraulic reservoir cap and fill the reservoir with hydraulic oil (approximate capacity 4 gallons [15 l]).

Wipe up any spilled oil and replace the cap tightly. Do not operate the power unit without the cap securely in place.

Recommended oil: U.S. Oil Corporation hydraulic oil with the following characteristics. Viscosity Index 101 Grade 32 (viscosity of 156 at 100 F; viscosity of 43.7 at 210 F).

Equivalent oils: Gulf Harmony 32A; Mobile D.T.E. 24; Shell Tellus 32; Texaco Rando H.D. 32.

Fill the Fuel Tank

Remove the fuel cap and fill the tank with diesel fuel (approximately 5 gallons [19 l]). The cap has a fuel level gauge in it.

Figure 1-8. Remove the fuel tank cap and fill the tank with diesel fuel (approximate capacity 5 gallons [19 l]).

Wipe up any spilled fuel and replace the cap tightly. Do not operate the power unit without the cap securely in place.

NOTE: The power unit is capable of operating at 1800 psi (124 bar). It is extremely important that the hoses used with this unit are rated for 3000 psi (186 bar) or higher pressure.

1. Connect the pressure supply port (male coupler) located on the right front side on the oil reservoir (item #8 in).
2. Connect the return hose from the remote valve or device to the return line coupler (female coupler) located on the left front side of the unit (item #4 in).
3. Before starting the unit, make sure the adjustable flow control valve (item #2 in) is set at 0 (handle rotated completely clockwise). Setting the valve in the "on" position it would put enough load on the engine to prevent it from starting.

Note: Never connect or disconnect quick couplers when the flow control valve is "on". Never connect or disconnect quick couplers when the circuit is under pressure.

OPERATING INSTRUCTIONS

1. Turn the flow control knob to the OFF position (all the way counter-clockwise).

Figure 1-9. Turn the flow control all the way OFF before starting the power unit or connecting hoses.

2. Push the throttle lever all the way down. Using the keyswitch, jog the engine without starting it several times to prime the pump.

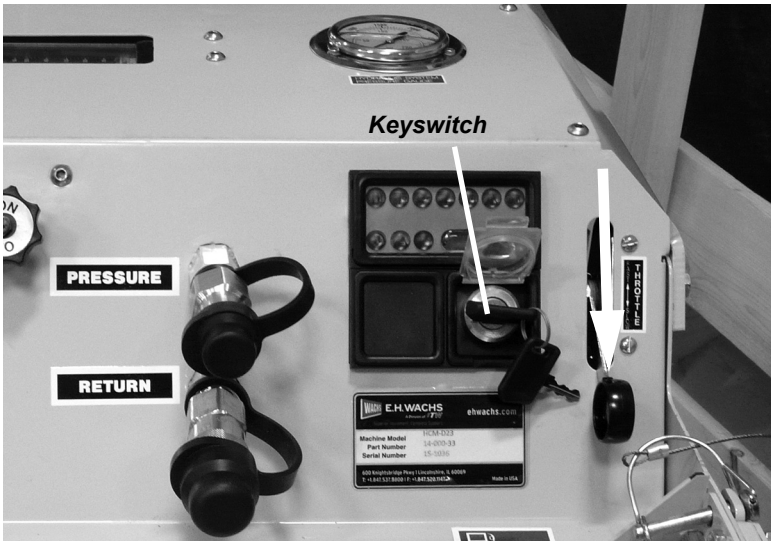


Figure 1-10. Turn the keyswitch briefly with the throttle at the lowest setting to jog the engine without starting it.

NOTE: The adjustable flow control valve must always be set to 0 (completely clockwise) when there is not a pressure hose connected to the pressure port. When the flow control is "on" and the unit is allowed to "deadhead", it will dump all the flow over the relief valve and cause an extreme amount of heat.

3. Start the engine (see the Kohler engine manual for proper starting of the engine). Run the engine at idle speed for a couple of minutes before operating the unit at system pressure.

4. Attach the hoses from the tool to the **PRESSURE** and **RETURN** fittings on the control panel.

5. Adjust the throttle lever to the maximum setting.

Figure 1-11. Set the throttle to the maximum speed position for operation.

6. To operate the tool, turn the flow control knob clockwise to start hydraulic flow. Adjust the knob for the desired operating speed.

Figure 1-12. Turn the flow control in the ON direction to operate the tool. (Control panel shown without hoses attached.)

7. To stop the tool, turn the flow control knob back to OFF.

8. To turn off the power unit, set the throttle lever to the minimum speed position and then turn off the key-switch.

Operating Notes

Make sure that the hydraulic circuit is properly plumbed and appropriate for the available amount of oil from the unit. A circuit with long hoses or a high-capacity tool could lower the reservoir level considerably. The power unit must be plumbed to an open center valve.

If the hydraulic circuit is improperly plumbed, pressure will build immediately and dump over the relief valve setting, causing excessive heat.

Allow the power unit to run for at least 10 minutes at a time to make sure the battery is charged. Starting and stopping the unit frequently, and operating for only short periods of time, will not keep the battery fully charged.

Cautions

Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood rather than hands to search for suspected leaks.

If injured by escaping fluid, SEE A DOCTOR AT ONCE. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

See the safety guidelines in the next chapter.

MAINTENANCE

NOTE: A hydraulic hose failure could be very hazardous; frequent inspection is important.

Every time you use the power unit, inspect all fasteners, hydraulic hoses, and fittings.

Service and maintain the engine according to the maintenance schedule in the Kohler Engine Owner's Manual.

Every time you use the power unit, check the hydraulic oil level in the reservoir. Check the oil level periodically during extended use. Proper oil level should be approximately 1" to 1-1/2" from the top of the reservoir.

Check the condition of the hydraulic fluid, looking for contaminants, dirt, or discoloration. Change the fluid as soon as it becomes dirty or discolored.

The hydraulic system includes a return line filter. Replace the filter every time you replace the hydraulic fluid. Do not try to get extended life out of a clogged filter.

Figure 1-13. A label on the side of the HPU indicates the location of the hydraulic oil drain plug (underneath the unit).

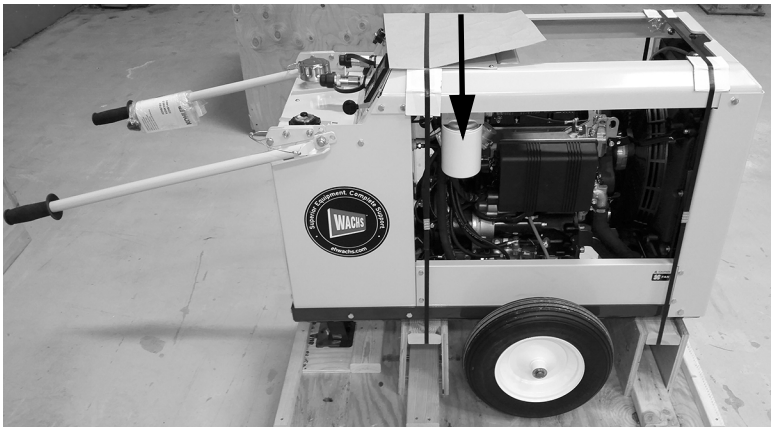


Figure 1-14. The hydraulic oil filter is at the top of the engine compartment. Replace the filter every time you replace the hydraulic oil.

Chapter 2
Safety

E.H. Wachs takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

Read this chapter carefully before operating the hydraulic power unit. It contains important safety instructions and recommendations.

In This Chapter

OPERATOR SAFETY

OPERATOR SAFETY

Follow these guidelines for safe operation of the equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin.
- **INSPECT MACHINE AND ACCESSORIES.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.
- **ALWAYS READ PLACARDS AND LABELS.** Make sure all placards, labels, and stickers are clearly legible and in good condition. You can purchase replacement labels from E.H. Wachs Company.
- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts.

Look for this symbol throughout the manual. It indicates a personal injury hazard.

Always turn machine off before doing any adjustments or service.

- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Safety Symbols

This icon is displayed with any safety alert that indicates a personal injury hazard.

⚠ WARNING

This safety alert indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.

⚠ CAUTION

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

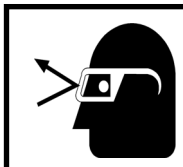
NOTICE

This alert indicates a situation that, if not avoided, **will** result in **damage to the equipment**.

IMPORTANT

This alert indicates a situation that, if not avoided, **may** result in **damage to the equipment**.

Protective Equipment Requirements



WARNING

Always wear impact resistant eye protection while operating or working near this equipment.

For additional information on eye and face protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

CAUTION

Personal hearing protection is recommended when operating or working near this equipment.

Hearing protectors are required in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises, and resonant structures can increase the noise level in the area. For additional information on hearing protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.

Safety Procedures

All safety requirements listed below are those generally applicable to hydraulically-powered machinery but are not intended to be an all-inclusive list. They are intended as guidelines only and will assist in avoiding risk of injury when followed by qualified, experienced personnel. These

precautions should be included in the comprehensive safety program for the particular machinery, equipment, plant or process and overseen by personnel capable of analyzing any hazards associated with operating and maintaining the equipment.

WARNING

Many types of machinery have parts that may start moving as soon as the hydraulic circuit is filled and pressurized. This could result in injury to personnel or damage to machinery.

1. Return all movable parts of the machinery being operated to their normal startup condition, if possible, before starting unit.
2. Be sure all personnel, product, etc. are clear of machinery before starting hydraulic unit.
3. Check to make sure any hydraulic connections which may have been removed, replaced or disconnected during shut down have been reconnected securely before starting hydraulic unit.
4. Before starting the unit, perform all equipment checks described at the beginning of the operating instructions.
5. If there are tools or machinery being operated by the HPU that may move when hydraulic flow or pressure are turned off or turned on, block or lock these parts in position before shutting down the hydraulic unit.

WARNING

Make sure all personnel are clear from the machinery being operated before shutting down the HPU.

6. Shut down the hydraulic unit and relieve pressure from all pressurized accumulators, actuators and lines before removing, tearing down or performing maintenance on any remotely-located actuators, hoses, filters, valves, piping, etc.
7. Any personnel observing or working on or adjacent to hydraulically-powered equipment must never place themselves in a location or position that could produce an injury in the event of:

- a hydraulic line failure either with the unit running or shut down;
- pump or motor failure or;
- pin-hole leaks in hoses or fittings;
- movement of machine components during normal operation or resulting from a component malfunction or failure.

8. Do not inspect hoses and fittings for leaks using your bare hands. A pin-hole leak can inject hydraulic fluid through the skin, with the potential for serious injury.

9. Avoid locating equipment in any environment for which it was not designed and which may create a dangerous operating condition such as an explosive atmosphere (e.g., gas, dust), high heat (e.g., molten metal, furnace), chemicals, extreme moisture, etc.

10. Avoid bodily contact with hydraulic fluids. Some hydraulic fluids may irritate or injure the eyes and skin. Check with your fluid suppliers to obtain this information.

11. Use only E.H. Wachs parts and materials when servicing the equipment. Substitute parts or materials could produce a hazardous operating condition.

12. When piping your equipment, use only materials of adequate size and strength to suit the flows and pressures of the system. Consider all safety factors when selecting the strength of materials to allow for shock and over-pressure conditions which could occur.

WARNING
The injection of hydraulic fluid under the skin can cause serious injury and even result in death. If an injection injury occurs, seek medical treatment immediately.

SAFETY LABELS

There is a safety label on each side of the unit indicating the location of the engine fan. Keep hands away from the engine compartment while the unit is running.

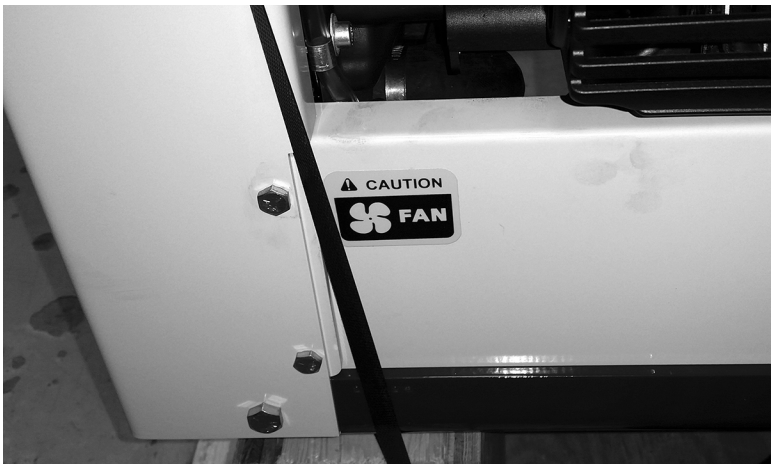


Figure 2-1. Labels on each side of the unit indicate the location of the engine fan.

A safety label warns that the engine muffler can get very hot. Do not touch the muffler during or after operating the power unit.

Figure 2-2. A Hot Surface label is located near the engine muffler.

A safety label on each side of the unit warns of a pinch-point hazard between the enclosure and the collapsible handles. Keep hands clear when lower the handles from the operating (extended) position.

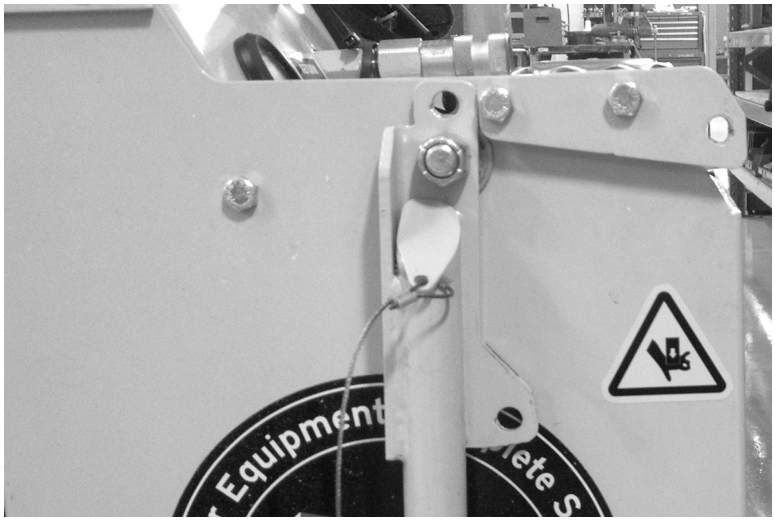


Figure 2-3. The Pinch Point label is located on both sides of the unit by the collapsible handles.

Chapter 3
Ordering Information

In This Chapter

ORDERING REPLACEMENT PARTS

REPAIR INFORMATION

WARRANTY INFORMATION

RETURN GOODS ADDRESS

To place an order, request service, or get more detailed information on any E.H. Wachs products, call us at one of the following numbers:

U.S.	800-323-8185
International:	847-537-8800

You can also visit our Web site at:

www.ehwachs.com

ORDERING REPLACEMENT PARTS

When ordering parts, refer to the drawings and parts lists in Chapter 8. Please provide the part description and part number for all parts you are ordering.

REPAIR INFORMATION

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number
- A description of the problem or the work to be done.

Before we perform any repair, we will estimate the work and inform you of the cost and the time to complete it.

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs. Retain the owner's registration record and warranty card for your information.

RETURN GOODS ADDRESS

Return equipment for repair to the following address.

E.H. Wachs
600 Knightsbridge Parkway
Lincolnshire, Illinois 60069 USA